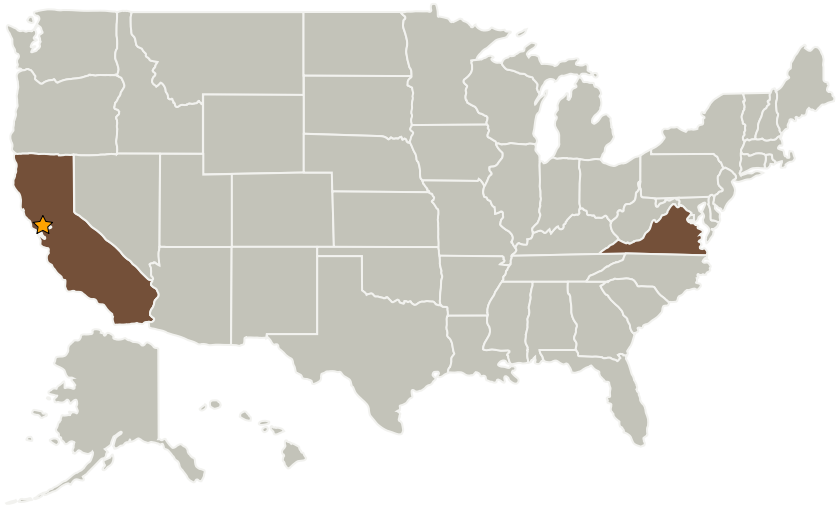
A Real-Time Quantitative Condition Alerting and Analysis Support System for Aircraft Maintenance, Phase I

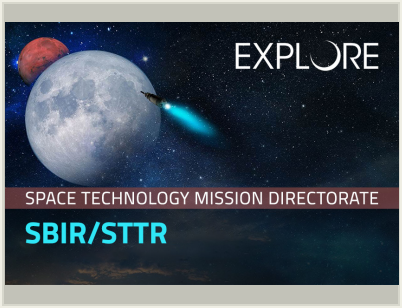
Completed Technology Project (2006 - 2006)

Project Introduction

Financial constraints and the need for improved operational efficiency are requiring airlines to emphasize "on-condition" maintenance over scheduled maintenance where possible. However, many of the specific conditions and events of interest to airline maintenance are not being monitored by automatic systems. Some of these events are detected through a subjective determination by the aircrew. This subjective determination can result in both maintenance being performed unnecessarily and maintenance not being performed when needed. AeroTech will develop a multi-tier, Quantitative Condition Alerting and Analysis Support (Q-CAAS) system for aircraft that will in real-time, automatically downlink to maintenance personnel, reports on the occurrence of specific conditions and events (e.g. loads exceedance). The reports will be displayed on a web based, ground station network. The system will also track individual aircraft's exposure to particular in-flight conditions allowing airline personnel to tailor maintenance programs to individual aircraft. By providing quantifiable data in real-time, operational decisions can be made to minimize the impact and maximize the benefits of on-condition maintenance. The Q-CAAS system will be comprised only of software that can be implemented on most current fleet aircraft, keeping costs low, minimizing the time to market, and therefore maximizing the likelihood of industry adoption.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Aerotech Research	Supporting Organization	Industry	Newport News, Virginia

Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.2 Intelligent Data Understanding